

## REMARKS

An Office Action was mailed on October 3, 2002. Claims 1 – 39 are pending in the present application. With this Response, claims 1 - 39 are amended, and new claims 40 – 78 are added. No new matter is introduced. Support for these amendments may be found, for example, with reference to Applicants' specification at page 13, lines 24 – 33 and page 17, lines 8 - 14

### REJECTION UNDER 35 U.S.C. § 103

Claims 1, 2, 4, 7 – 11, 13, 16 – 19, 22, 25 – 28, 34 and 37 – 39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,475,342 to Nakamura et al. in view of U.S. Patent No. 5,319,191 to Crimmins. Claims 3, 5, 6, 12, 14, 15, 23, 24, 35 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Crimmins and U.S. Patent No. 6,038,049 to Shimuzu et al. Claims 20, 21 and 30 – 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Crimmins and U.S. Patent No. 6,115,163 to Nobuhara. Claim 29 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Crimmins and U.S. Patent No. 6,018,407 to Hatakeyama et al. Applicants amend claims 1 - 39 to further clarify the nature of their invention, and respectfully traverse these rejections.

In Applicants' amended independent claims 1, 10, 19 and 28, Applicants claim a burst signal detection circuit comprising, for example: a) an amplitude detection circuit detecting the bottom level of an input signal when an input signal level is falling, removing the DC level variation of the input signal by differentially amplifying the difference between the input signal level and the peak level or bottom level of the input

signal, and detecting the maximum amplitude of said input signal, b) a threshold level control circuit controlling a threshold level, and c) a comparator circuit comparing the output level of said amplitude detection circuit with said threshold level and outputting a detection signal indicating the presence or absence of the burst signal.

By removing the DC level variation in the input signal, Applicants' claimed invention enables a reduction in the false detection of burst signals (see, e.g., page 4, line 17 through page 5, line 1 of Applicants' specification).

New claims 40 – 78 claim a variant of the invention claimed in independent claims 1, 10, 19 and 28, in which the DC level variation is removed by detecting a peak level of the input signal is detected when the input signal is rising and differentially amplifying the difference between a current input signal level and the detected peak level (support may be found for this variant, for example, at page 17, lines 23 – 28 of Applicants' specification). In addition, in another variant described for example in claims 30 and 69, the amplitude detection circuit includes a master-slave type automatic threshold control circuit by which the absolute minimum level and the relative maximum level of the input signal are detected (claim 30), or by which the absolute maximum level and the relative minimum level of the input signal are detected (claim 69). Detecting both levels dynamically improves the performance of the circuit in removing DC level variation (see, e.g., page 25, line 26 – page 28, line 10 of Applicants' specification).

Nakamura discloses an amplifier for stably maintaining a constant output, including a cascade of basic circuits (BCN) each for detecting a top value and bottom value of a waveform and for outputting a middle value between the top and bottom values (see, e.g., FIG. 6 of Nakamura). The Examiner compares a first basic circuit (BC1)

to Applicants' DC variation removing circuit, and a second basic circuit (BC2) to Applicants' amplitude identifying circuit. The Examiner acknowledges that Nakamura fails to teach Applicants' comparator circuit for comparing the levels of the amplitude detection circuit and threshold level control circuit, and cites Crimmins as teaching this missing limitation.

Crimmins discloses an amplitude shift-keyed receiver with signal delay and stretching to produce binary signal pulses. As shown in FIGs. 1 and 2 of Crimmins, a burst signal pulse 106 is produced on an output 108 whenever a stretched signal 68 exceeds a threshold signal  $T_h$  above a specified noise level.

Nakamura's circuit BC2 detects a peak signal level and a bottom signal level that are averaged in order to provide a reference signal. In sharp contrast to Applicants' claimed invention, Nakamura fails to disclose or suggest that the bottom level is detected while the input signal level is falling (see, e.g., Applicants' FIG. 3A). Crimmins also fails to disclose or suggest this claimed element of Applicants' invention.

Crimmins discloses means for producing a pulse when a signal amplitude exceeds a threshold. However, unlike Applicants' claimed invention, Crimmins fails to teach or suggest detecting a burst signal on the basis of comparing a peak signal amplitude to a threshold (see, e.g., peak detection circuit 16A, comparator 15A and threshold level control circuit 17A of Applicants' FIG. 1).

Accordingly, Applicants respectfully submit that the combination of Nakamura and Crimmins fail to teach all of the limitations of Applicants' independent claims 1, 10, 19 and 28, and that claims 1, 10, 19 and 28 therefore are not made obvious by the combination of these references and are allowable. As claims 2 – 9, 11 – 18, 20 – 27 and

29 – 39 respectively depend from allowable claims 1, 10, 19 and 28, Applicants further submit that claims 2 – 9, 11 – 18, 20 - 27 and 29 – 39 are allowable for at least this reason.

### CONCLUSION

An earnest effort has been made to be fully responsive to the Examiner's objections. In view of the above amendments and remarks, it is believed that claims 1 – 78, which include independent claims 1, 10, 19, 28, 40, 49, 58 and 67, and the claims that depend therefrom, stand in condition for allowance. Passage of this case to allowance is earnestly solicited. However, if for any reason the Examiner should consider this application not to be in condition for allowance, he is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged on Deposit Account 50-1290.

Respectfully submitted,



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